

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of claims:

Please amend the claims as follows:

1. (Currently Amended) A ~~back-light~~~~backlight~~ device for a liquid crystal display device, comprising:

a light source providing light;

a light waveguide plate guiding light from the light source, said light waveguide plate having an emitting surface, a front surface and a bottom surface, the emitting surface being adjacent to the light source;

a reflector arranged under the bottom surface of the light waveguide ~~waveguide~~ plate, reflecting light; and

at least one single layer cholesteric liquid crystal (CLC) film arranged on the front surface of the light waveguide ~~waveguide~~ plate, ~~selectively collimating light by controlling a helical pitch P of said CLC film according to the equation:~~

$$\lambda_0 = P(n_o + n_e)/2,$$

~~where λ_0 is a wavelength of vertically incident light, P is a helical pitch, n_o is an ordinary refractive index, and n_e is an extraordinary refractive index.~~

2. (Currently Amended) The ~~back-light~~~~backlight~~ device of claim 1, wherein the single layer CLC film is one of either a ~~right handed~~ ~~right-handed~~ or a ~~left handed~~ ~~left-handed~~ CLC layer, the ~~right handed~~ ~~right-handed~~ CLC layer selectively reflecting ~~right handed~~ ~~right-handed~~ circularly polarized light and the left-handed CLC layer reflecting left-handed circularly polarized light.

3. (Currently Amended) The ~~back-light~~~~backlight~~ device of claim 1, wherein the at least one single layer CLC film has a dual-layered structure having both a ~~right~~ ~~right-handed~~ and a ~~left handed~~ ~~left-handed~~ CLC layer, the ~~right~~ ~~right-handed~~ and ~~left handed~~ ~~left-handed~~ CLC layer selectively reflecting ~~right~~ ~~right-handed~~ and ~~left-handed~~ circularly polarized light, respectively.

4. (Currently Amended) The ~~back-light~~~~backlight~~ device of claim 1, further comprising a prism sheet arranged between the at least one single layer CLC film and the front surface of the light ~~wave guide~~ ~~waveguide~~ plate.

5. (Currently Amended) A ~~back-light~~~~backlight~~ device for a liquid crystal display device, comprising:

a light source providing light;

a light waveguide plate guiding light from the light source, said light waveguide plate having an emitting surface, a front surface and a bottom surface, the emitting surface being adjacent to the light source;

a reflector arranged under the bottom surface of the light waveguide plate, reflecting light; and

at least one single layer cholesteric liquid crystal (CLC) films arranged over the front surface of the light waveguide plate, collimating light, wherein the at least one CLC film selectively reflects vertically incident light with a wavelength of more than 600 nm by controlling a helical pitch P of said CLC film according to the equation:

$$\lambda_0 = P(n_o + n_e)/2,$$

where λ_0 is a wavelength of vertically incident light, P is a helical pitch, n_o is an ordinary refractive index, and n_e is an extraordinary refractive index.

6. (Currently Amended) The ~~back-light~~backlight device of claim 5, wherein each single layer CLC film is one of either a ~~right-handed~~ right-handed or a ~~left-handed~~ left-handed CLC layer, each ~~right-handed~~ right-handed CLC layer selectively reflecting ~~right-handed~~ right-handed circularly polarized light and each left-handed CLC layer reflecting left-handed circularly polarized light.

7. (Currently Amended) The ~~back-lightbacklight~~ device of claim 5, wherein each single layer CLC film is formed by a dual-layered structure, each structure having both a ~~right right-handed~~ and a ~~left-handed left-handed~~ CLC layer, the ~~right right-handed~~ and ~~left-handed left-handed~~ CLC layers selectively reflecting ~~right right-handed~~ and left-handed circularly polarized light, respectively.

8. (Currently Amended) The ~~back-lightbacklight~~ device of claim 5, further comprising a prism sheet arranged between the at least one single layer CLC film and the front surface of the light ~~wave guide waveguide~~ plate.

9. (Currently Amended) A ~~back-lightbacklight~~ device for a liquid crystal display device, comprising:

a light source providing light;

a light waveguide plate guiding light from the light source, said light waveguide plate having an emitting surface, a front surface and a bottom surface, the emitting surface being adjacent to the light source, the length of said emitting surface being substantially shorter than a length of the front surface;
and

at least one cholesteric liquid crystal (CLC) film arranged on the emitting surface of the light ~~wave guide waveguide~~ plate, collimating light.

10. (Currently Amended) The ~~back-lightbacklight~~ device of claim 9, wherein the at least one CLC film is one of either a ~~right handed~~ ~~right-handed~~ or a ~~left handed~~ ~~left-handed~~ CLC layer, the ~~right handed~~ ~~right-handed~~ CLC layer selectively reflecting ~~right handed~~ ~~right-handed~~ circularly polarized light and the left-handed CLC layer reflecting left-handed circularly polarized light.

11. (Currently Amended) The ~~back-lightbacklight~~ device of claim 9, wherein each of the at least one CLC films is formed by a dual-layered structure, each structure having both a ~~right~~ ~~right-handed~~ and a ~~left handed~~ ~~left-handed~~ CLC layer, the ~~right~~ ~~right-handed~~ and ~~left handed~~ ~~left-handed~~ CLC layers selectively reflecting ~~right~~ ~~right-handed~~ and left-handed circularly polarized light, respectively.

12. (Currently Amended) The ~~back-lightbacklight~~ device of claim 9, further comprising a prism sheet arranged between the at least one CLC film and the front surface of the ~~wave guide~~ ~~waveguide~~ plate.

13. (Currently Amended) A ~~back-lightbacklight~~ device for a liquid crystal display device, comprising:

a light source providing light;

a light waveguide plate guiding light from the light source, said light waveguide plate having an emitting surface, a front surface and a bottom surface, the emitting surface being adjacent to the light source, ~~the length of said emitting surface being substantially shorter than a length of the front surface;~~

a reflector arranged under the bottom surface of the light waveguide plate, reflecting light; and

at least one cholesteric liquid crystal (CLC) film arranged on the emitting surface of the light waveguide plate adjacent to the light source.

14. (Currently Amended) The ~~back-lightbacklight~~ device of claim 13, wherein the single layer CLC film is one of either a ~~right handed right-handed~~ or a ~~left handed left-handed~~ CLC layer, the ~~right handed right-handed~~ CLC layer selectively reflecting ~~right handed right-handed~~ circularly polarized light and the left-handed CLC layer reflecting left-handed circularly polarized light.

15. (Currently Amended) The ~~back-lightbacklight~~ device of claim 13, wherein the at least one single layer CLC film has a dual-layered structure having both a ~~right right-handed~~ and a ~~left handed left-handed~~ CLC layer, the ~~right right-handed~~ and ~~left handed left-handed~~ CLC layer selectively reflecting right and left-handed circularly polarized light, respectively.

16. (Currently Amended) The ~~back-light~~~~backlight~~ device of claim 13, further comprising a prism sheet arranged between the at least one single layer CLC film and the front surface of the light ~~wave guide~~ ~~waveguide~~.